

Installation Instructions

Part No. 50DJ900021

SAFETY CONSIDERATIONS

WARNING

Before beginning any modification, be certain that the main line electrical disconnect switch is in the OFF position. Electric shock could result. Tag disconnect switch with suitable warning labels.

Installation and servicing of air-conditioning equipment can be hazardous due to system pressure, flammable gases, and electrical components. Only trained and qualified personnel should install, repair, or service air-conditioning equipment.

Untrained personnel can perform the basic maintenance functions of cleaning coils and replacing filters. All other operations should be performed by trained service personnel. When working on air-conditioning equipment, observe precautions in literature, tags and labels attached to unit, and other safety precautions that may apply. Follow all safety codes.

GENERAL

This accessory space temperature reset package consists of a thermistor and potentiometer. See Table 1. It is used to elevate the supply-air temperature in 48DK,FK,JK and 50DK,DY,FK,FY,JK,JY variable air volume units in order to avoid over-cooling of the space while maintaining occupied space air motion and ventilation.

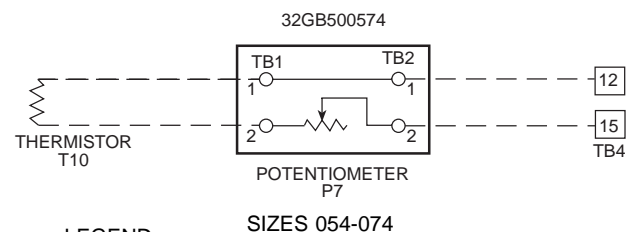
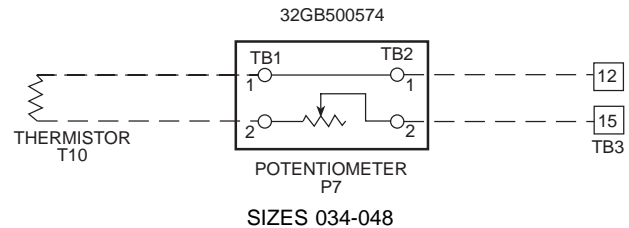
Table 1 — Package Contents

ITEM	QUANTITY	PART NO.
Thermistor Sensor with 35-ft Leads	1	HH79NZ014
Temperature Reset Potentiometer	1	32GB500574

INSTALLATION

Thermistor (T10) must be wired in series with potentiometer (P7). The two of them must then be wired to the appropriate terminal block in the unit control box. All wiring must conform to NEC (National Electrical Code) and local codes. To install the accessory space temperature reset package:

1. Turn off all power to unit.
2. Install thermistor T10 in the occupied space to be controlled. Locate the thermistor in the space with the greatest cooling load, so that the leaving-air temperature is not reset too much to cool the space with the most demanding cooling load.



LEGEND

TB — Terminal Block

Fig. 1 — Accessory Wiring Detail

3. Mount potentiometer in the unit control box or some other secure indoor location. Set the potentiometer for the temperature at which reset is to begin. When the occupied space temperature drops below this setting, reset will occur.
4. Wire thermistor and potentiometer as shown in Fig. 1. The thermistor has 35-ft leads, but additional wire may be spliced in to make the leads longer.

NOTE: When splicing additional wires, solder the wires at the splices to achieve maximum continuity.
5. Set DIP (dual in-line package) switch no. 2 on the main VAV (variable air volume) control board to the ON position to enable the reset function. See Fig. 2.
6. Find potentiometer P3 in the center of the accessory reset board in the unit control box, and set it for the maximum reset temperature to be allowed when the unit is in the Reset mode. See Fig. 3.
7. Multiple T10 space sensors may be used. Multiple (4 or 9) sensors (part no. HH79NZ014) may be wired as shown in Fig. 4 with total wiring not to exceed 1000 ft.

NOTE: When splicing additional wires, solder the wires at the splices to achieve maximum continuity.

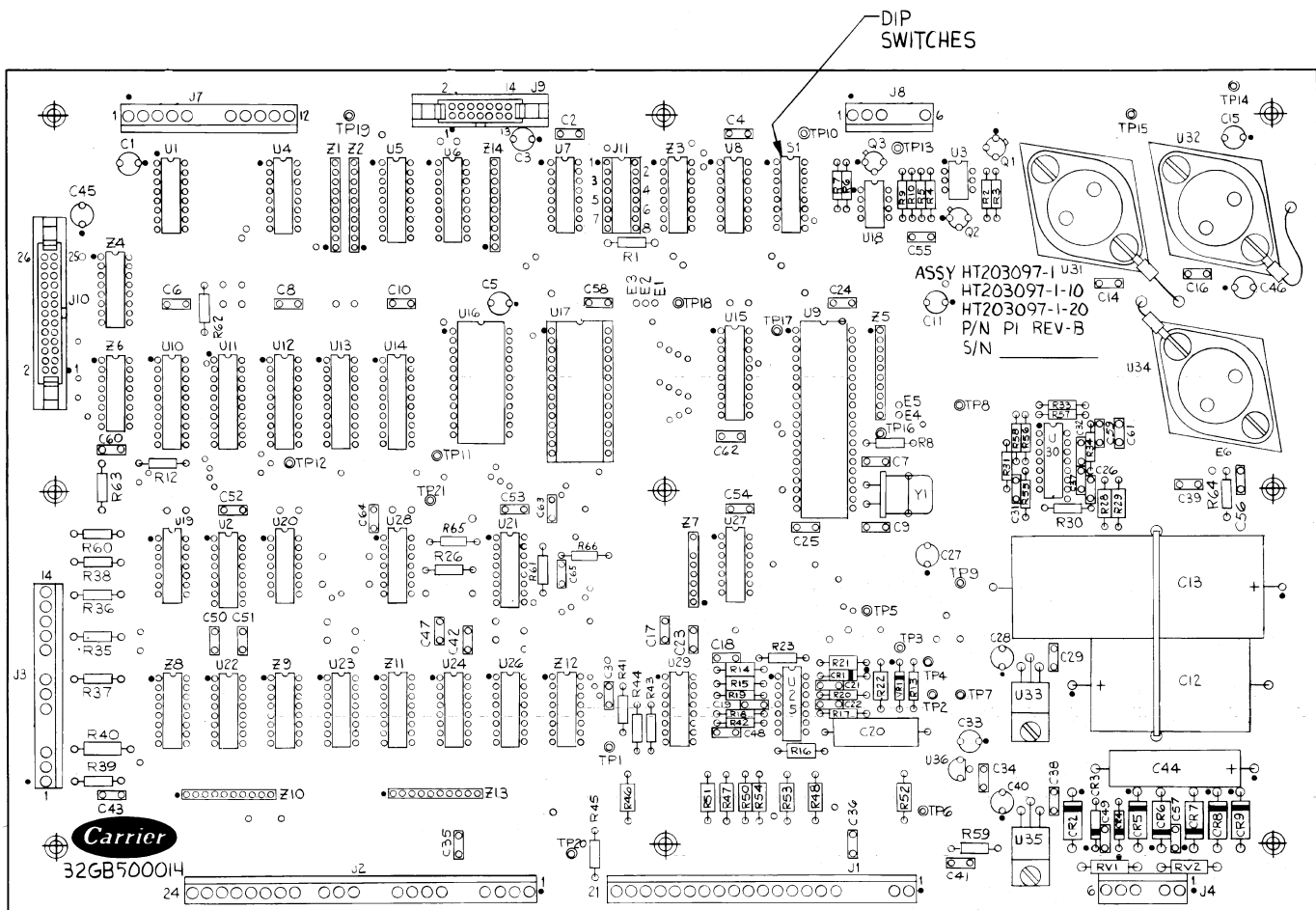
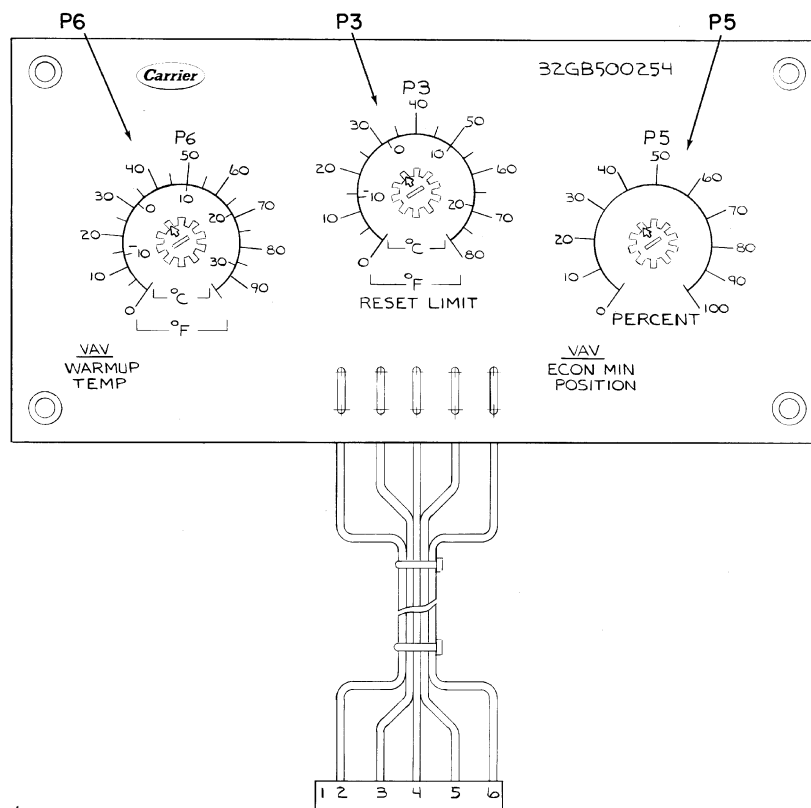


Fig. 2 — Main Variable Air Volume Control Board



LEGEND
P — Potentiometer
VAV — Variable Air Volume

Fig. 3 — Accessory Reset Board

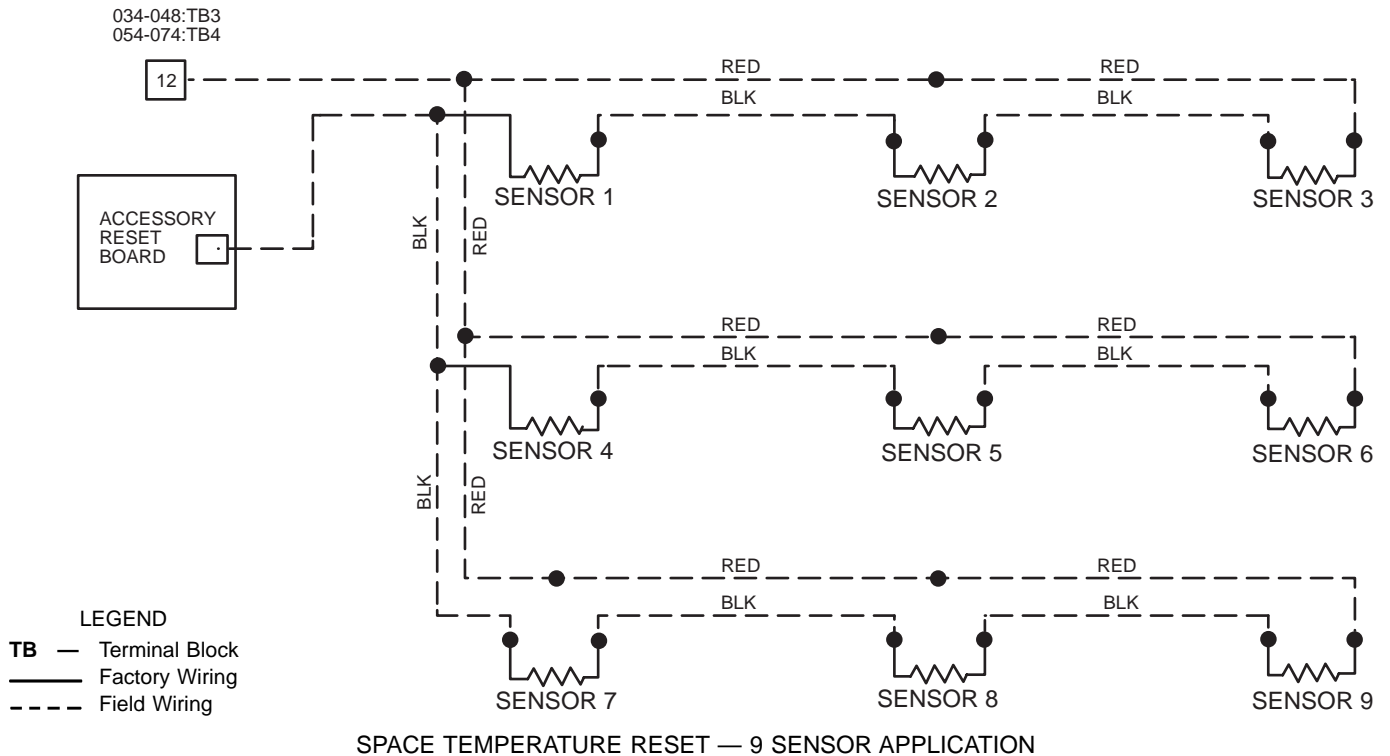
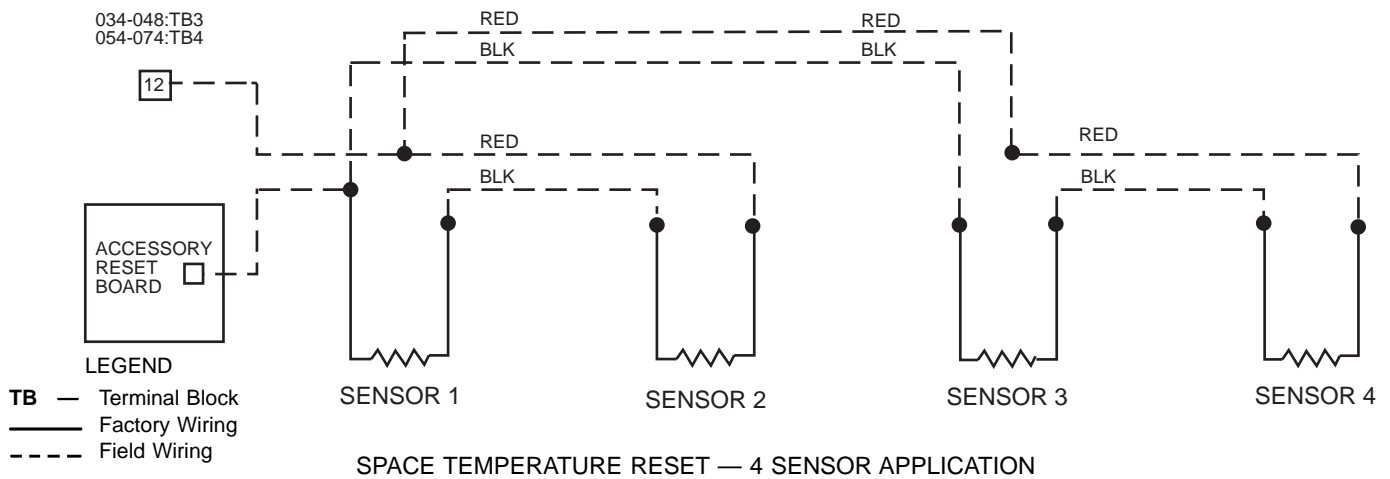


Fig. 4 — Multiple Sensor Wiring Diagram

OPERATION

If space temperature is equal or less than the reset set point ($T10 \leq P7$), the LED (light-emitting diode) 2-digit display on the unit display board will display 20 and reset will begin. The leaving-air set point is modified (reset) based on the following formula:

$$MSP = SP + [(P3 - SP) \div 3] (P7 - T10)$$

Where:

SP = Leaving-Air Set Point

MSP = Modified Leaving-Air Set Point

P3 = Maximum Leaving-Air Temperature (Reset)

P7 = Reset Initiation Temperature

T10 = Actual Space Temperature

NOTE: If $T10 > P7$, no reset occurs. The maximum MSP = 70 F.

EXAMPLE:

$$SP = 55 \text{ F}$$

$$P3 = 65 \text{ F}$$

$$P7 = 72 \text{ F}$$

$$T10 = 70 \text{ F}$$

MSP is calculated as follows:

$$MSP = 55 + [(65 - 55) \div 3] \times (72 - 70)$$

$$MSP = 61.67 \text{ F}$$

In this example, the space temperature T10 is lower than the reset initiation temperature P7. Therefore, the unit will control to the modified leaving-air set point MSP of 61.67 F. If $MSP > P3$, the unit will control to 65 F (the P3 set point).

Outdoor-Air Temperature Reset — Space temperature is the recommended means of initiating reset because it ensures that the space is adequately cooled and allows reset to be used at any outdoor ambient temperature. However, this accessory package may be used for outdoor ambient reset if desired.

The thermistor T10 must be adequately protected from the elements and potentiometer P7 must be installed in an indoor location. The valid range for the reset set point potentiometer P7 is between 40 and 100 F.

TROUBLESHOOTING

With the accessory reset package installed, the unit operates without reset until the occupied space temperature drops below the potentiometer P7 setting. When the occupied space temperature drops below the P7 setting, the supply-air temperature is reset to a higher temperature. The button on the display module may be pressed, and operating code 21 (reset in effect) will be displayed.

Code 81 — Reset Thermistor or Potentiometer

Failure — The microprocessor observes a thermistor (T10) and a potentiometer (P7) in series on the same circuit. Possible causes of this fault code are:

- A shorted or open thermistor (T10)
- A shorted or open potentiometer (P7)
- A wiring problem. Look for pinched leads or poor connections. If the thermistor leads were extended, check the splice carefully.

Code 84 — Reset Limit Potentiometer Failure

— Potentiometer P3 has a full-scale resistance of 10K ohm, but because it is in parallel with 2 other potentiometers on the accessory board, its measured resistance is 3.3K ohm. This potentiometer has a valid setting range of 0° F to 80 F. This fault code will automatically reset once the fault has been cleared. Possible causes of this fault code are:

- If DIP switch no. 2 is in the ON position, and the accessory board is missing from the unit.
- The potentiometer (P3) is turned fully clockwise or counterclockwise, and is therefore outside the valid range.
- The wiring between the potentiometer (P3) and the processor is incorrect.
- The potentiometer (P3) is open or shorted.

The Reset Limit Potentiometer (P3) is Set Above

70 F, but Controls to 70 F — Although the potentiometer can be set as high as 80 F, the microprocessor defaults to 70 F for any potentiometer settings above 70 F.

Reset Does Not Occur Even Though the Space Temperature Is Below the Set Point of the P7

Potentiometer — Check the J2 jumper switch to see that it is in the ON position to activate reset.

Potentiometer P7 Set Point — Proper setting of the P7 potentiometer may be made on a resistance basis. The microprocessor initiates reset when it detects a resistance of the thermistor plus the potentiometer of 13,084 ohm. The

potentiometer set point may be calculated using the following formula:

$$P7_R = 13,084 - T10_R$$

Where:

$P7_R$ = the desired set point of the P7 potentiometer in ohms

$T10_R$ = the resistance of the T10 thermistor for the desired set point

EXAMPLE:

T10 desired set point is 70 F.

$T10_R$ from Table 2 for 70 F is 5929 ohms.

$$P7_R = 13,084 - 5929$$

$$P7_R = 7155 \text{ ohms}$$

Using an ohmmeter, set the P7 potentiometer to 7155 ohms to achieve a reset initiation set point of 70 F.

Table 2 — Thermistor Resistance and Voltage Drop Characteristics

TEMP (F)	RESISTANCE (Ohms)	VOLTAGE DROP (v)
31.0	16813.8	3.582
32.0	16345.7	3.553
33.0	15892.2	3.523
34.0	15452.7	3.494
35.0	15026.7	3.464
36.0	14613.9	3.434
37.0	14213.6	3.404
38.0	13825.5	3.373
39.0	13449.2	3.343
40.0	13084.2	3.312
41.0	12730.1	3.281
42.0	12386.6	3.250
43.0	12053.3	3.219
44.0	11730.0	3.187
45.0	11416.1	3.156
46.0	11111.5	3.124
47.0	10815.8	3.093
48.0	10528.7	3.061
49.0	10250.0	3.029
50.0	9979.3	2.997
51.0	9716.5	2.965
52.0	9461.3	2.933
53.0	9213.4	2.901
54.0	8972.6	2.869
55.0	8738.6	2.837
56.0	8511.4	2.805
57.0	8290.6	2.772
58.0	8076.1	2.740
59.0	7867.7	2.708
60.0	7665.1	2.676
61.0	7468.3	2.644
62.0	7277.1	2.612
63.0	7091.2	2.581
64.0	6910.6	2.549
65.0	6735.1	2.517
66.0	6564.4	2.486
67.0	6398.6	2.454
68.0	6237.5	2.423
69.0	6080.8	2.391
70.0	5928.6	2.360
71.0	5780.6	2.329
72.0	5636.8	2.299
73.0	5497.0	2.268
74.0	5361.2	2.237
75.0	5229.1	2.207
76.0	5100.8	2.177
77.0	4976.0	2.147
78.0	4854.8	2.117
79.0	4736.9	2.088
80.0	4622.4	2.058